

CLAIMS

1. A treatment using silica gel to reduce sulfur in catalytically processed gasoline and in intermediate crude-oil distillates, characterized by use of a chemical absorption filter including a silica gel packing for absorbing the sulfur present in catalytic and intermediate crude-oil distillates and not eliminated in sulfur-reduction processes employed in catalytic cracking and intermediate crude-oil distillation plants.

2. The treatment in accordance with Claim 1, characterized by producing catalytically processed gasoline with a sulfur content of less than between approximately 0.14% and 0.16%.

3. The treatment in accordance with Claim 1, characterized by producing catalytically processed gasoline with a FBP (final boiling point) approximately between 220°C and 225°C.

4. The treatment in accordance with Claim 1, characterized by employing 28,200 Grade-12 silica gel packed in a vessel or filter open at both ends, through which circulates a flow of catalytically processed gasolines or intermediate crude-oil distillates containing sulfur.

5. The treatment in accordance with Claim 1, characterized by installation of silica gel-packed filters at the exit from catalytically processed gasoline and intermediate crude-oil production processes, provided for subsequent reduction of sulfur content.

6. The treatment in accordance with Claim 1, characterized by the fact that there may be multiple filters assembled in series for reduction of sulfur content in catalytically processed gasolines and intermediate crude-oil distillates.

7. The treatment in accordance with Claim 1, wherein the filter operates at the exit temperature and pressure from the sulfur-reduction treatments at plants for production of catalytically processed gasoline and distillation of intermediate crude-oil products.

5           8. The treatment in accordance with Claim 1, characterized by the fact that the filter is used until the output of catalytically processed gasoline from the filter contains 0.15% sulfur by weight, at which time the filter must be changed.

10           9.     Catalytically processed gasoline having a sulfur content of less than about 0.15% and a final boiling point of between about 220°C and about 225°C.

15           10.    An improved catalytic processor including an output end for reducing the sulfur content of catalytically processed gasoline and distillation of intermediate crude oil products, said improvement comprising:

            a filter having leak proof housing with an opening including a means for attaching said opening to a valve attached to the output end of the improved catalytic processor, said housing further having an exit;

            silica gel substantially filling the interior of said housing;

20           whereby when said valve is opened to allow the gasoline and intermediate crude oil products produced by said catalytic processor to flow through said filter from said opening of said housing, through said silica gel, and out through said housing exit, sulfur remaining in said gasoline and intermediate crude oil products will be absorbed by said silica gel and reduced in said gasoline and intermediate crude oil products.

25           11.    The improved catalytic processor of claim 10 wherein when said filter cannot further absorb sulfur from said gasoline and intermediate crude oil products, it can be regenerated and then reused.

12. The improved catalytic processor of claim 11 including two or more filters mounted to said output end in series to allow continued operation of at least one filter during regeneration of other filters.

13. The improved catalytic processor of claim 11 including a means for regenerating said filter while it is attached to said catalytic processor.

14. The improved catalytic processor of claim 10 wherein said filter can be used to produce gasoline which has less than about 0.15% sulfur and a final boiling point of between about 220°C and 225°C.

15. The improved catalytic processor of claim 13 including an exit valve attached to said housing exit, said exit valve movable between a first conduit for the passage of treated gasoline and intermediate crude oil products, and a second conduit for the passage of regeneration air and sulfur during regeneration, wherein said regeneration is accomplished by passing heated regeneration air from the opening in said housing, through said silica gel, and out through said second conduit to a sulfur plant.

16. The improved catalytic processor of claim 15 including a heater for heating said regeneration air to a temperature of about 450°C.